

ABSTRACT

Disclosed is a method for forming a high-Re-content alloy film, such as a Re-based film containing Re at 98 % or more by atomic composition, or an alloy film containing Re in the range of 65 to less than 98% by atomic composition and at least one of Ni, Fe and Co. The method comprises performing an electroplating process using an electroplating bath containing an aqueous solution which includes a perrhenate ion, at least one ion selected from the group consisting of Ni, Fe, Co and Cr ions, and at least one of a Li ion and a Na ion. The present invention allows a high-Re-content alloy film usable as a corrosion-resistant alloy coating for a high-temperature component or the like to be formed through an electroplating process using an aqueous solution, so as to provide heat/corrosion resistances to the component, even if it has a complicated shape, in a simplified manner at a low cost.